I claim:

1. A gas sensor for monitoring and controlling combustion processes comprising a sensor material of a perovskite structure oxide of formula ABO_x, wherein A is a large 3-valent ion, wherein B is a transition metal ion substituted to a small degree by tungsten, and wherein x denotes a variable oxygen stoichiometry.

2. The sensor of claim 1, wherein the perovskite formula is $AB_{1-y}W_yO_x$.

3. The sensor of claim 2, wherein y is in a range between 0.03 and 0.15.

4. The sensor of claim 3, wherein y is in a range between 0.05 and 0.10.

5. The sensor of claim 2, wherein x is about 3.

6. The sensor of claim 2, wherein the perovskite structure is $PrFe_{0.95}W_{0.05}O_x$.

7. The sensor of claim 2, wherein the perovskite structure is $LaFe_{0.95}W_{0.05}O_x$.

8. The sensor of claim 1, wherein the perovskite structure does not form stable sulfates in environments contaminated by sulfur.

9. The sensor of claim 1, wherein minimum doping on the B-site provides a required range of oxygen partial pressure operation.

10. The sensor of claim 9, further comprising a 6-valent ion for doping on the B-site.

11. The sensor of claim 10, wherein the 6-valent ion enables a p-type range of the perovskite structure for use over a range of oxygen partial pressures of interest for monitoring and controlling combustion processes.

12. A method of preparation of the sensor material of claim 2, comprising reacting starting material oxides in stoichiometric proportions in a molten salt, yielding a powder, screen-printing the powder on a substrate, forming a microstructure, and forming the sensor.

13. A method of sensing combustion status of an atmosphere of combustion gases comprising contacting the sensor material as described in claim 2 with the atmosphere, sensing change in conductance, resistance, capacitance and/or impedance in the sensor material, and monitoring and controlling combustion processes responsive to the change sensed in the sensor material.